Original Article

MEDICINE PALLIATIVE CARE

DOI: 10.47582/jompac.1367036

J Med Palliat Care. 2023;4(5):601-606

Youtube as an information source on bipolar disorder: evaluation of the Turkish and English content

Neslihan Altunsoy

Psychiatrist, Special Psychiatry Clinic of Neslihan Altunsoy, Ankara, Turkey

Cite this article as: Altunsoy N. Youtube as an information source on bipolar disorder: evaluation of the Turkish and English content. *J Med Palliat Care*. 2023;4(5):601-606.

Received: 27.09.2023 ◆ **Accepted**: 23.10.2023 ◆ **Published**: 27.10.2023

ABSTRACT

Aims: Assess and compare the qualities and reliabilities of Turkish and English YouTube videos providing information about Bipolar Disorder and how beneficial they are for viewers in our study.

Methods: In our study, a total of 120 videos were evaluated, with 60 in Turkish and 60 in English, which appeared on the first three pages of search results. Videos that were entirely or partially quoted and repeated were not rated, but videos with an earlier publication date were included. A total of 80 videos were included in the study. Videos published in Turkish and English were watched and rated by a psychiatrist.

Results: Significant portion of the videos were uploaded by healthcare institutions (29.3%) or a professional (psychiatrist/psychologist) (28%). When all videos were evaluated, the median Modified DISCERN score was 3.48 (IQR: 1), the median GQS (Global Quality Scale) score was 3.67 (IQR: 1), the median total video content score was 4.00 (IQR: 2), and the median VPI (Video Power Index) score was 67.14 (IQR: 207).When comparing the scales used to assess the quality of videos, it was found that the VPI score ($p<0.001$) was significantly higher in English-language videos compared to Turkish-language videos, while the GQS score ($p=0.116$) and the modified DISCERN scale score ($p=0.594$) were similar

Conclusion: It was observed that the examined videos reached an average of 70,000 views, with the highest reaching approximately 13.5 million views. These data demonstrate the significant role of the internet and YouTube in providing access to health information for patients. In this study, it was determined that YouTube videos related to Bipolar Disorder have an average to good quality and reliability.

Keywords: Bipolar disorder, mental disorder, internet, YouTube, patient education

INTRODUCTION

Bipolar disorder is a chronic and incapacitating mental disorder that typically begins during adolescence or early adulthood. BD is distinguished by repetitive mood episodes that vary from severe depressive states to manic episodes.[1] Because of the diverse factors contributing to its origins, comprehensive findings from studies involving biology, neurochemistry, and neuroimaging have not yielded definitive evidence for a specific causative theory regarding bipolar disorder.[2] The lifetime prevalence rate is reported to be 2.4%, while the annual incidence rate is 1.4%.[3] There is an extensive literature on Bipolar Disorder. However, it is not known to what extent these data are included in the continuously growing internet sources. Access to high-quality, reliable information on the epidemiology, etiology, symptoms, and treatment of the disease on the internet can be beneficial for individuals with Bipolar Disorder, both in understanding their condition and complying with their treatment processes.

It has been announced that 4.95 billion people worldwide use the internet, and YouTube is the most common video viewing platform globally.[4] While the primary purpose of YouTube is to watch entertaining videos, it is now also seen as a valuable educational resource. It is increasingly observed that YouTube is being used as a source of health-related information.[5,6] In the coming years, it is predicted that YouTube will be widely used for the flow of health information among healthcare professionals and patients, the development of supportive communication among patients, and the enhancement of public health surveillance.[7] Health information videos on YouTube are obtained from various sources, including doctors, healthcare institutions, universities, medical faculties, patients, and advertisers. However, regardless of the source of the content, YouTube's terms of service state that "the content is the responsibility of the person or organization providing the service".[8] In other words, there is no mechanism on YouTube that monitors the quality and accuracy of video content.

Corresponding Author: Neslihan Altunsoy, drneslihanaltunsoy@gmail.com

This work is licensed under a Creative Commons Attribution 4.0 International License.

YouTube's search results are based more on popularity, relevance, and viewing history rather than content quality. This leads to unverified and partially misleading content, particularly causing issues in the field of healthcare.[9] When considering the literature, it can be observed that many studies have addressed the issue of content quality in health-related videos on YouTube.[10-12] While there are studies on the role of YouTube videos in disseminating psychoeducation for conditions such as dementia, schizophrenia, and narcolepsy, there is still an insufficient number of studies regarding the quality of videos related to bipolar disorder.[13-16] The scarcity of studies evaluating the quality of YouTube videos containing information related to Bipolar Disorder in the literature, as well as the absence of such studies in Turkey, led us to aim to assess and compare the qualities of Turkish and English YouTube videos providing information about Bipolar Disorder and how beneficial they are for viewers in our study.

METHODS

In accordance with the aim of the study, the search history was cleared on August 15, 2023, and the search field of the YouTube page was used to search for Turkish videos with "Bipolar Bozukluk" and "Bipolar Bozukluk Tedavi", and for English videos with "Bipolar Disorder" and "Bipolar Disorder Treatment." Research on internet search engines indicates that a significant portion of users rates the top three pages as search results.[17] Therefore, in our study, a total of 120 videos were evaluated, with 60 in Turkish and 60 in English, which appeared on the first three pages of search results. Videos that were entirely or partially quoted and repeated were not rated, but videos with an earlier publication date were included. A total of 80 videos were included in the study. Videos published in Turkish and English were watched and rated by a psychiatrist who was proficient enough to evaluate English videos. In our study preliminary assessments were made in several videos (%10 of all videos) with two assesors, and since there was a high intraclass correlation (r=0.96), we chose a single assessor for our study.

The upload date, duration, number of views, likes, and dislikes, as well as the video uploader (1. Psychiatrist/ Psychologist, 2. Hospital, 3. Patient, 4. Educational channel, 5. Association, 6. News channel), and the number of comments were recorded. The like rate (Likes x 100 / (Likes + Dislikes)), view rate ((Views / Days)), and, consequently, the Video Power Index (VPI) value ((Like rate x View rate) / 100) were calculated.[18] The quality of the video was evaluated using the modified DISCERN scale and the Global Quality Scale (GQS). In the video's content, the presence of certain important subheadings and features which were previously explored in a research about bipolar disorder and youtube (1. Impact of the disease on daily life, 2. Symptoms of the disease, 3. Personal history, 4. Bipolar disorder type 1-2 differentiation, 5. Treatment and outcomes, 6. Discussion on prognosis, 7. Animation, 8. Graphics, 9. Pathomechanism of the disease, 10. Doctor as a speaker, 11. Patient experience) was individually assessed, and content density was measured.[16]

DISCERN Scale's aim is to assist individuals and information producers in evaluating the quality of written information regarding treatment options for any health issue. Discern instrument is a measure of the reliability of health-related information presented. Although it does not require professional knowledge, being a professional does not disadvantage the use of the scale. It has become nearly a gold standard in measuring the reliability of health-related publications-videos in studies conducted worldwide. Therefore, this scale has been chosen for this study. A modified DISCERN scale consisting of five questions is used to assess visual media and information.[17] All videos were evaluated using the modified DISCERN scale in terms of the reliability and completeness of the information contained in the content (**Table 1**).[19] The reliability of the information contained in the video was rated on a scale of 1 to 5. The Global Quality Scale (GQS) is used to assess the quality of the videos, with scores ranging from 1 to 5. Scores of 1 to 2 indicate low quality, 3 indicates average quality, and scores of 4 to 5 indicate high video quality (**Table 2**).[17,19]

Table 1. The modified DISCERN score (1 point for every yes, 0 points for no)

Item	Questions
1	Are the aims clear and achieved?
2	Are reliable sources of information used? (i.e., publication cited, speaker is a specialist)
3	Is the information presented both balanced and unbiased?
4	Are additional sources of information listed for patient reference?
5	Are areas of uncertainity mentioned?

Table 2. Global quality scale

Score	Global Score Description
1	Poor quality, poor flow of the site, most information missing, not at all useful for patients
2	Generally poor quality and poor flow, some information listed but many important topics missing, of very limited use to patients
3	Moderate quality, suboptimal flow, some important information is adequately discussed but others poorly discussed, somewhat useful for patients
4	Good quality and generally good flow, most of the relevant information is listed, but some topics not covered, useful for patients
5	Excellent quality and excellent flow, very useful for patients

Since the study did not use human or animal data and utilized publicly available videos on YouTube, as in other similar studies, an ethics committee application was not made.[20-22]

Statistical Analysis

The SPSS 17.0 software package was used for data analysis. Kolmogorov Smirnov test was used to check the compliance of variables to normal distribution. All variables were non-normally distributed as a result of this, continuous variables were expressed as median (interquartile range(IQR)), while categorical variables were presented as numbers and percentages. To assess the significance of the difference between group means for continuous variables, the Mann-Whitney U test was used for non-normally distributed groups. Values with a p-value below 0.05 were considered statistically significant.

RESULTS

Video Content

Looking at the distribution of video content subheadings, almost all videos included the impact of the disease on daily life (93.3%) and the symptoms of the disease (96%). Videos featuring a psychiatrist/psychologist as the speaker were present in 58.7% of the videos, while treatment and treatment outcome videos were found in 41.3% of them. Differentiating between Bipolar Disorder type 1 and 2 was covered in 34.7% of the videos, discussions on prognosis in 29.3%, personal stories from patients and their families in 28%, patient experience in 26.7%, the pathomechanism of the disease in 18.7%, animation in 18.7%, and graphics in 9.3% of the videos.

Video Uploading Source

The distribution of video sources was as follows: a significant portion of the videos were uploaded by healthcare institutions (29.3%) or a professional (psychiatrist/psychologist) (28%). 16% of the videos were from educational channels, 12% from news channels, 12% from associations related to bipolar disorder, and 2.7% were uploaded by patients. It was observed that the majority of Turkish-language videos (70%) and a relatively smaller portion of English-language videos (42.9%) were uploaded by healthcare institutions and professionals.

Video Statistics

Looking at the general characteristics of the videos, the average number of days since their publication was 1414 days (IQR: 1017), the median duration of videos in seconds was 310 (IQR: 466), the median number of views was 72,846 (IQR: 278,821), the median number of likes was 645 (IQR: 1002), the median number of comments was 53 (IQR: 417), the like rate was 97.3 (IQR: 3.45), and the view rate had a median of 64.89 (IQR: 201).

The average number of days since publication (p=0.464) and the average video duration (p=0.260) were similar for videos published in Turkish and English. However, the number of views (p<0.001), the number of comments (p=0.032), view rates (p<0.001), and like rates (p<0.001) of videos published in Turkish were statistically significantly lower compared to English videos (**Table 3**).

Looking at the number of views, it was determined that videos featuring healthcare professionals (median (+): 108178, median (-): 58514 p=0.035), animations (median (+): 102884, median (-): 63236 p=0.045), and patient/patient relative experiences (median (+): 112320, median (-): 59653 p=0.030) were more widely viewed.

Video Quality Assessment

When all videos were evaluated, the median Modified DISCERN score was 3.48 (IQR: 1), the median GQS (Global Quality Scale) score was 3.67 (IQR: 1), the median total video content score was 4.00 (IQR: 2), and the median VPI (Video Power Index) score was 67.14 (IQR: 207).

When comparing the scales used to assess the quality of videos, it was found that the VPI score (p<0.001) was significantly higher in English-language videos compared to Turkish-language videos, while the GQS score (p=0.116) and the modified DISCERN scale score (p=0.594) were similar (**Table 3**).

Table 3. Comparison of videos that were published as Turkish and English

	English	Turkish	p
Time (second)	357 (IQR:511)	209.5 (IQR:483)	0.260
Days since published	1161(IQR:1505)	1388.5 (IQR:1657)	0.464
Views	273240 (IQR:593713)	45069 (IQR:95802)	<0.001
Likes	2300 (IQR:17647)	405(IQR:1353)	<0.001
Comments	225 (IQR:1751)	42 (IQR:246)	0.032
Like ratio	98.58 (IQR:2.45)	95.98 (IQR:3.62)	0.562
View ratio	131.28 (IQR:970)	32.09 (IQR:61.22)	<0.001
VPI	164.72 (IQR:965)	33.31 (IQR:60.5)	<0.001
GQS	4 (IQR:1)	3.5 (IQR:1)	0.116
Modified discern	4(IQR:1)	3(IQR:1)	0.594
Total video content	4 (IQR:2)	4 (IQR:2)	0.054

*Mann Whitney U test

Regarding the content of the videos, a significant difference was observed in that approximately 70% of Turkish-language videos had at least one professional (psychiatrist/psychologist) speaker, while this percentage was limited to 40% in English-language videos (p=0.002).

In terms of content, it was found that animation was used more frequently in English-language videos (English: 28.6%, Turkish: 10%, p=0.039). There was no significant difference between English and Turkish-language videos in terms of the presence of other content subheadings such as the impact of the disease on daily life (English: 100%, Turkish: 87.5%, p=0.057), symptoms of the disease (English: 100%, Turkish: 92.5%, p=0.098), personal stories (English: 37.1%, Turkish: 20%, p=0.099), differentiation between Bipolar Disorder type 1 and 2 (English: 42.9%, Turkish: 27.5%, p=0.163), treatment and outcomes (English: 45.7%, Turkish: 37.5%, p=0.471), prognosis discussion (English: 25.7%, Turkish: 32.5%, p=0.520), diagrams (English: 8.6%, Turkish: 10%, p=0.039), pathomechanism of the disease (English: 25.7%, Turkish: 12.5%, p=0.039), and patient experience. (English: 37.1%, Turkish: 17.5%, p=0.039).

Video Quality Correlation

In the conducted correlation analysis, a high level of significant relationship was found between the Modified DISCERN and GQS (Global Quality Scale) data (r=0.775, p<0.001). There was also a significant moderate-level relationship between the total video content average (indicating how many of the 11 content subheadings were included) and GQS (r=0.595) as well as Modified DISCERN (r=0.447). No significant relationship was found between VPI (Video Power Index) and the three quality scales. In the correlation analysis, video duration was found to have a significant relationship with Modified DISCERN (r=0.313), GQS (r=0.310) and total video content (r=0.295) (Table 4).

Table 4. Video quality correlation

	Modified discern	GQS	Duration	Total video Content	VPI
Modified discern	1	r=0.775 p<0.001	r=0.313 p=0.006	r=0.447 p<0.001	r=0.097 p=0.408
GQS	r=0.775 p<0.001	1	r=0.308 p=0.007	r=0.595 P<0.001	r=0.212 p=0.068
Duration	r=0.313 p=0.006	r=0.308 p=0.007	1	r=0.295 p=0.010	r=0.076 p=0.517
Total video content	r=0.447 p<0.001	r=0.595 P<0.001	r=0.295 p=0.010	1	r=0.215 p=0.063
VPI	r=0.097 p=0.408	r=0.212 p=0.068	r=0.076 p=0.517	r=0.215 p=0.063	1

GQS: Global quality scale; VPI: Video power index

In the analysis of video content, it was observed that some content items were associated with video quality criteria. When comparing videos with and without patient experience criteria, videos with patient experience had a significantly lower median Modified DISCERN score (Median(-)=4.00, Median(+)=3.00, p=0.008).

When examining the criterion of having a professional speaker in the video content, videos with professional speakers had significantly higher median GQS (Global Quality Scale) scores (Median0: 3.00, Median1: 4.00, p=0.037) and median Modified DISCERN scores (Median(-): 3.00, Median(+): 4.00, p<0.001).

In the comparison of videos based on the criterion of explaining the pathomechanism in the video content, videos with an explanation of the pathomechanism had significantly higher VPI (Video Power Index) scores (Median (-): 47.42, Median (+): 122.66, p=0.017), view rates (Median (-): 45.36, Median (+): 122.66, p=0.011), total video content scores (Median (-): 4.00, Median (+): 7.00, p<0.001), GQS scores (Median (-): 3.00, Median (+): 4.50, p=0.001), Modified DISCERN scores (Median (-): 3.00, Median (+): 4.00, p=0.009), and median likes (Median (-): 545, Median (+): 2600, p=0.038).

Videos that met the criterion of discussing treatment and outcomes in the video content had significantly higher median VPI (Video Power Index) scores (Median(-): 43.98, Median(+): 104.90, p=0.042), view rates (Median(-): 43.98, Median(+): 95.76, p=0.049), total video content scores (Median(-): 4, Median(+): 6, p<0.001), GQS (Global Quality Scale) scores (Median(-): 3, Median(+): 4, p<0.001), Modified DISCERN scores (Median(-): 3.00, Median(+): 4.00, p=0.004), and median video duration (Median(-): 223.5, Median(+): 414, p=0.12).

In videos where there was a discussion about prognosis in the video content, total video content scores (Median(-): 4, Median(+): 6.50, p<0.001), GQS scores (Median(-): 4.00, Median(+): 4.00, p=0.007), and Modified DISCERN scores (Median(-): 3.00, Median(+): 4.00, p=0.011) were significantly higher.

DISCUSSION

To our knowledge our study is the first publication to investigate the quality and reliability of YouTube videos related to Bipolar Disorder in Turkey. It was observed that the examined videos reached an average of 70,000 views, with the highest reaching approximately 13.5 million views. These data demonstrate the significant role of the internet and YouTube in providing access to health information for patients. In this study, it was determined that YouTube videos related to Bipolar Disorder have an average to good quality and reliability. When we look at the literature, a recent study conducted in Poland examined only English-language videos related to bipolar disorder, and the quality assessment using the DISCERN scale (median 4.1) concluded it as good.[16]

Our study demonstrates that many of the YouTube videos about Bipolar Disorder are published by healthcare institutions and professionals, and it is believed that the high quality results are related to this fact. It was found that there was no significant difference in terms of content richness and quality scores between Turkish and English videos. Although English videos had higher view rates, like rates, and VPI due to their appeal to a much larger audience, the frequent participation of professionals as speakers in Turkish videos may have played a role in achieving similar video quality.

Our study showed that videos added by healthcare professionals were of higher quality (as determined by the Discern and GQS scales) compared to videos added by independent users. This highlights the importance of the source of medical information in YouTube videos.[23] However, in our study, it was also found that the VPI value calculated based on view and like rates did not parallel the quality scales. In previous research, it has been found that non-profit organizations and academic sources have the highest ratings for informative content, which is consistent with our findings. However, these videos accounted for only 12.7% of the total, with a 13.4% share of the total viewership. It is also observed that misleading or insufficient information videos, similar to those described as useful, can receive high likes.[17] There are also studies that show that a significant portion of those who watch health-related videos on the internet are not interested in the source of the video.[24]

In our study, we found that the YouTube videos we evaluated covered a wide range of topics related to Bipolar Disorder, including its symptoms, its impact on daily life, the distinction between Bipolar Disorder 1 and 2, treatment and outcomes, prognosis, the pathomechanism of the disease, the patient's quality of life, and family support. Additionally, the videos also discussed features such as disease risk factors and protective factors. In terms of content, it was shown that videos providing information on pathomechanism, prognosis, treatment, and outcomes had higher quality scores. When we look at the view numbers, it was determined that videos featuring healthcare professionals, animations, and patient/patient relative experiences were more widely viewed. In our study, videos that shared personal experiences had high view rates, but their content quality was found to be low. Studies in the literature also mention that videos where patients and their families share their experiences are preferred, so it is argued that healthcare professionals should prepare health information videos in a way that conveys these experiences.[16,25,26] Therefore, public and academic institutions that provide healthcare services need to provide more guidance and oversight on the content and quality of YouTube videos.[11]

This study has limitations. The search outcomes may vary depending on the researcher's geographical location, and they can also fluctuate based on the timing of the search due to the constant and substantial influx of new video uploads. One may argue that one assessor is not enough for evaluation. Many publications have been conducted with a single assessor on YouTube, and they have also worked on health-related projects, including mental health among them.[27-31] In a systematic review about the reliability of youtube as a health-related information source, it was shown that even most of the videos had two assessors, an important portion of the videos had a single assessor.[32] In order to avoid any bias we have conducted preliminary assessments for several videos with two assessors, as there was a high intraclass correlation, we have chosen a single assessor for our study.

Given that this paper constitutes a cross-sectional assessment, we suggest its repetition in the coming years to track changes in the quality of video content.

CONCLUSION

YouTube serves as a moderate to good source of basic information for informing patients about Bipolar Disorder. YouTube's unregulated structure implies that videos may not meet a higher standard for conveying medical information. Therefore, healthcare professionals should strive to provide reliable online information. Informative videos about Bipolar Disorder that are publicly available in Turkish on the internet should be of high quality, meet the expectations of the target audience, contain accurate and precise information, and be prepared by expert physicians as well as academic institutions to meet the expectations of the community, especially by including the experiences of patients and their families, and the use of animation could be more beneficial.

ETHICAL DECLARATIONS

Ethics Committee Approval: Since the study did not use human or animal data and utilized publicly available videos on YouTube, as in other similar studies, an ethics committee application was not made.

Informed Consent: Not required for this study.

Referee Evaluation Process: Externally peer-reviewed.

Conflict of Interest Statement: The authors have no conflicts of interest to declare.

Financial Disclosure: The authors declared that this study has received no financial support.

Author Contributions: All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

REFERENCES

1. Korkmaz ŞA, Kızgın S. Neutrophil/high-density lipoprotein cholesterol (HDL), monocyte/HDL and platelet/HDL ratios are increased in acute mania as markers of inflammation, even after controlling for confounding factors. *Curr Med Res Opin.* 2023;39(10):1383-1390. doi:10.1080/03007995.2023.2260302
2. Korkmaz ŞA, Kızgın S, Oğuz EF, Neşelioğlu S, Erel Ö. Thiol-disulphide homeostasis, ischemia-modified albumin, complete blood count-derived inflammatory markers and C-reactive protein from acute mania to early remission in bipolar disorder. *J Affect Disord.* 2023;339:426-434. doi:10.1016/j.jad.2023.07.079
3. Merikangas KR, Akiskal HS, Angst J, et al. Lifetime and 12-month prevalence of bipolar spectrum disorder in the National Comorbidity Survey replication. *Arch Gen Psychiatry.* 2007;64(5):543-552. doi:10.1001/archpsyc.64.5.543
4. Aslam S. YouTube by the Numbers (2020): Stats, Demographics & Fun Facts [Internet]. [cited 2020 Apr13]. Available from: https://www.omnicoreagency.com/youtube-statistics/
5. Chen X, Hay JL, Waters EA, et al. Health literacy and use and trust in health information. *J Health Commun.* 2018;23(8):724-734.
6. Jacobs W, Amuta AO, Jeon KC. Health information seeking in the digital age: An analysis of health information seeking behavior among US adults. *Cogent Soc Sci.* 2017;3(1):1302785.
7. Mamlin BW, Tierney WM. The promise of information and communication technology in healthcare: extracting value from the chaos. *Am J Med Sci.* 2016;351(1):59-68. doi:10.1016/j.amjms.2015.10.015
8. YouTube. Terms of Service. https://www.youtube.com/static?template=terms.
9. Nour MM, Nour MH, Tsatalou OM, Barrera A. Schizophrenia on YouTube. *Psychiatr Serv.* 2017;68(1):70-74. doi:10.1176/appi.ps.201500541
10. Gabarron E, Fernandez-Luque L, Armayones M, Lau AY. Identifying measures used for assessing quality of YouTube videos with patient health information: a review of current literature. *Interact J Med Res.* 2013;2(1):e2465.
11. Madathil KC, Rivera-Rodriguez AJ, Greenstein JS, Gramopadhye AK. Healthcare information on YouTube: a systematic review. *Health Informatics J.* 2015;21(3):173-194. doi:10.1177/1460458213512220
12. Farag M, Bolton D, Lawrentschuk N. Use of YouTube as a Resource for surgical education-clarity or confusion. *Eur Urol Focus.* 2020;6(3):445-449. doi:10.1016/j.euf.2019.09.017
13. Lam NHT, Tsiang JTH, Woo BKP. Exploring the Role of YouTube in Disseminating Psychoeducation. *Acad Psychiatry.* Springer International Publishing; 2017;41(6):819–822.
14. Lam NHT, Woo BKP. Efficacy of Instagram in promoting psychoeducation in the Chinese-Speaking population. *Health Equity.* 2020;4(1):114-116. doi:10.1089/heq.2019.0078
15. Lam NHT, Woo BKP. Efficacy of instagram in promoting psychoeducation in the Chinese-Speaking population. Health Equity 2020;4(1):114-116.
16. Szmuda T, Özdemir C, Fedorow K, Ali S, Słoniewski P. YouTube as a source of information for narcolepsy: a content-quality and optimization analysis. *J Sleep Res.* 2021;30(2):e13053. doi:10.1111/jsr.13053
17. Szmuda, T., Żydowicz, W. M., Ali, S., Fedorow, K., Słoniewski, P. YouTube as a source of patient information for bipolar disorder: a content-quality and optimization analysis. *J Psychiatry Ment Health.* 2021;6(2).
18. Singh AG, Singh S, Singh PP. YouTube for information on rheumatoid arthritis--a wakeup call?. *J Rheumatol.* 2012;39(5):899-903.
19. Van den Eynde J, Crauwels A, Demaerel PG, et al. YouTube Videos as a Source of Information About Immunology for Medical Students: Cross-Sectional Study. *JMIR Med Educ.* 2019;5(1):e12605. doi:10.2196/12605
20. Bernard A, Langille M, Hughes S, Rose C, Leddin D, Veldhuyzen van Zanten S. A systematic review of patient inflammatory bowel disease information resources on the World Wide Web. *Am J Gastroenterol.* 2007;102(9):2070-2077. doi:10.1111/j.1572-0241.2007.01325.x
21. Health Research Authority. http://www.hra-decisiontools.org.uk/research/ Accessed August 21, 2018.
22. Kocyigit BF, Akaltun MS, Sahin AR. YouTube as a source of information on COVID-19 and rheumatic disease link. *Clin Rheumatol.* 2020;39(7):2049-2054. doi:10.1007/s10067-020-05176-3
23. Nason GJ, Kelly P, Kelly ME, et al. YouTube as an educational tool regarding male urethral catheterization. *Scand J Urol.* 2014;49(2):189–192.
24. Şahin A, Şahin M, Türkcü FM. YouTube as a source of information in retinopathy of prematurity. *Ir J Med Sci.* 2019;188(2):613-617.
25. Fox S. Online health search 2006. Pew Internet and American Life Project. [Internet. Accessed January 26, 2012.] Available from: http://www.pewinternet.org/Reports/2006/Online-Health-Search-2006.aspx
26. Nestor PJ, Scheltens P, Hodges JR. Advances in the early detection of Alzheimer's disease. *Nat Med.* 2004;10Suppl:S34-S41. doi:10.1038/nrn1433
27. Friedman DB, Laditka JN, Hunter R, et al. Getting the message out about cognitive health: a cross-cultural comparison of older adults' media awareness and communication needs on how to maintain a healthy brain. *Gerontologist.* 2009;49(1):50-60.
28. Abdelmseih M. Evaluation and Reliability of YouTube Videos for Age-Related Macular Degeneration (AMD)-A Warning Sign!. *J Clin Exp Ophthalmol.* 2016;7:595.
29. Manning P. YouTube,'drug videos' and drugs education. *Drugs: Education, Prevention and Policy.* 2013;20(2):120-130.
30. Ocak U. Evaluation of the content, quality, reliability and accuracy of YouTube videos regarding endotracheal intubation techniques. *Niger J Clin Pract.* 2018;21(12):1651-1655. doi:10.4103/njcp.njcp_207_18
31. Kılınç DD. Is the information about orthodontics on Youtube and TikTok reliable for the oral health of the public? A cross sectional comparative study. *J Stomatol Oral Maxillofac Surg.* 2022;123(5):e349-e354.
32. Oliphant T. User engagement with mental health videos on YouTube. *J Canadian Health Libraries Association/J de l'Association des bibliothèques de la santé du Canada.* 2013;34(3):153-158.
33. Osman W, Mohamed F, Elhassan M, Shoufan A. Is YouTube a reliable source of health-related information? a systematic review. *BMC Med Educ.* 2022;22(1):382.